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PHONE NUMBER:	SENDER'S REFERENCE NUMBER: 1020-018US01
RE: Appeal Brief	APPLICATION SERIAL NUMBER: 10/565,537

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Michael Melkonian; Bjoern Podola	Confirmation No.	9911
Serial No.:	10/565,537	Examiner:	Taeyoon Kim
Filed:	July 21, 2004	Group Art Unit:	1651
Docket No.:	1020-018US01	Customer No.:	28863
Title:	METHOD AND DEVICE FOR CULTIVATING EUCARYOTIC MICROORGANISMS OR BLUE ALGAE, AND BIOSENSOR WITH CULTIVATED EUCARYOTIC MICROORGANISMS OR BLUE ALGAE		

CERTIFICATE UNDER 37 CFR 1.8 I hereby certify that this correspondence is being transmitted via facsimile to the United States Patent and Trademark Office on June 24, 2008

By: Caryl Harriman
Name: Caryl Harriman

Mail Stop Appeal Brief - Patents
Commissioner for Patents
Alexandria, VA 22313-1450

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We are transmitting herewith the attached correspondence relating to this application:

☒ Transmittal sheet containing Certificate of Facsimile
☒ Appeal Brief (22 pgs.)
☒ Petition for Extension of Time (1 pg.)

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Date: June 24, 2008

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Name: Kelly Patrick Fitzgerald
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PATENT

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PETITION FOR EXTENSION OF TIME

Mail Stop Appeal Brief - Patents
Commissioner for Patents
Alexandria, VA 22313-1450

Dear Sir:

In accordance with the provisions of 37 C.F.R. §1.136(a), it is respectfully requested that a one-month extension of time be granted in which to respond to the outstanding Final Office Action mailed October 25, 2007 and Notice of Appeal filed March 25, 2008, said period of response being extended from May 25, 2008 to June 25, 2008.

Please charge Deposit Account No. 50-1778 the amount of $60.00 to cover the required extension fee for a small entity.

Date: June 24, 2008

By: _____

Name: Kelly Patrick Fitzgerald
Reg. No.: 46,326

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PATENT

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APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450,
Alexandria, VA 22313

Sir:

This is an Appeal Brief responsive to the Final Office Action mailed on October 25, 2007. Appellant filed a Notice of Appeal on March 25, 2008. Accordingly, the deadline for this Appeal Brief is May 25, 2008, which has been extended one-month to run through June 25, 2008.

Please charge Deposit Account No. 50-1778 in the amount of $255.00 for Appellant's Appeal Brief fee for large entity. In addition, please charge Deposit Account No. 50-1778 the additional amount of $60.00 to cover a one-month extension for small entity.

Please charge any additional fees that may be required or credit any overpayment to Deposit Account No. 50-1778.

TABLE OF CONTENTS

REAL PARTY IN INTEREST

The real party in interest is Algenion GmbH & Co. KG, of Dietzenbach, Germany, the assignee of record.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 18-30 are on Appeal in this case. Claims 1-17 have been canceled. The pending claims 18-30 are set forth in the attached Claims Appendix.

Claims 18-28 stand rejected under 35 U.S.C. 102(b) as being anticipated by Davies (US 4,693,983) in light of Chaverot (US 5,445,473).

Claims 18-30 stand rejected under 35 U.S.C. 103(a) as being obvious in view of Davies.

Claims 18, 19 and 22-24 stand rejected under 35 U.S.C. 103(a) as being obvious in view of Halling (WO 90/02170).

Claims 20 and 21 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the Written Description requirement.

STATUS OF AMENDMENTS

No amendments have been filed since the Final Office Action mailed on October 25, 2007. Claims 18-30 were added in the Amendment filed on August 20, 2008 in response to the non-final Office Action mailed on May 18, 2007. Claims 18-30 have never been amended.

SUMMARY OF CLAIMED SUBJECT MATTER

Claim 18 is the sole independent claim on Appeal. Claim 18 recites a method for cultivating eukaryotic microorganisms or blue algae.[1] The method comprises applying the eukaryotic microorganisms or blue algae to a first major surface of a sheet-shaped perforated support,[2] wherein the sheet-shaped perforated support is essentially impermeable to the eukaryotic microorganisms or blue algae[3] and wherein the eukaryotic microorganisms or blue algae remain immobilized on the first major surface and are adapted to be removed,[4] supplying an aqueous solution to a second major surface of the sheet-shaped perforated support,[5] wherein the aqueous solution flows along the second major surface of the sheet-shaped perforated support and wherein a portion of the aqueous solution flowing along the second major surface of the sheet-shaped perforated substrate is essentially transported by capillary forces from the second major surface to the first major surface through the sheet-shaped perforated support,[6] and growing the eukaryotic microorganisms or blue algae on the first major surface of the sheet-shaped perforated support.[7]

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellant submits the following grounds of rejection to be reviewed on Appeal:

(1) The first ground of rejection to be reviewed is the rejection of claims 18-28 as being anticipated by Davies in light of Chaverot.

(2) The second ground of rejection to be reviewed is the rejection of claims 18-30 as being obvious in view of Davies.

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[1] See Page 1, first paragraph after the Title.
[2] See page 3, last 4 lines. See also Page 4, first three lines. See also page 4, last paragraph for support of sheet-shaped limitation.
[3] See page 3, last for lines.
[4] See page 4, first three lines.
[5] See page 5, second paragraph..
[6] See page 4, lines 5-7. See also page 9, lines 20-22.
[7] See page 4, lines 10-11.

(3) The third ground of rejection to be reviewed is the rejection of claims 18, 19 and 22-24 as being obvious in view of Halling.

(4) The fourth ground of rejection to be reviewed is the rejection of claims 20 and 21 as failing to comply with the Written Description requirement.

ARGUMENT

In the Final Office Action, the Examiner rejected claims 18-28 under 35 U.S.C. 102(b) as being anticipated by Davies (US 4,693,983) in light of Chaverot (US 5,445,473); rejected claims 18-30 under 35 U.S.C. 103(a) as being obvious in view of Davies; rejected claims 18, 19 and 22-24 under 35 U.S.C. 103(a) as being obvious in view of Halling (WO 90/02170); and rejected claims 20 and 21 under 35 U.S.C. 112, first paragraph, as failing to comply with the Written Description requirement.

Appellant respectfully traverses the current rejections advanced in the Final Office Action, and requests reversal by the Board of Patent Appeals based on the arguments below. Appellant respectfully requests separate review by the Board for each of Groups 1-6 addressed below under separate headings.

The Patent Examiner bears the burden of proof to demonstrate a prima facie case that an invention is not patentable.[8] In reviewing an Examiner's decision on Appeal, the Board must consider all of the evidence, and patentability is determined by a preponderance of the evidence with due consideration to persuasiveness of argument.[9]

In order to support an anticipation rejection under 35 U.S.C. 102(b), it is well established that a prior art reference must disclose each and every element of a claim. This well known rule of law is commonly referred to as the "all-elements rule."[10] If a prior art reference fails to disclose any element of a claim, then rejection under 35 U.S.C. 102(b) is improper.[11]

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[8] *See In re Oetiker*, 977 F.2d 1443

[9] *Id.*

[10] *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 USPQ 81 (CAFC 1986) ("it is axiomatic that for prior art to anticipate under 102 it has to meet every element of the claimed invention").

[11] *Id. See also Lewmar Marine, Inc. v. Barient, Inc.* 827 F.2d 744, 3 USPQ2d 1766 (CAFC 1987); *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (CAFC 1990); *C.R. Bard, Inc. v. MP Systems, Inc.*, 157 F.3d 1340, 48 USPQ2d 1225 (CAFC 1998); *Oney v. Ratliff*, 182 F.3d 893, 51 USPQ2d 1697 (CAFC 1999); *Apple Computer, Inc. v. Articulate Systems, Inc.*, 234 F.3d 14, 57 USPQ2d 1057 (CAFC 2000).

Davies fails to disclose not one, but many features that are recited in claims

The Supreme Court recently clarified the standard of non-obviousness under 35 U.S.C. 103(a) in *KSR Int'l Co. v. Teleflex, Inc.*[12] As reiterated by the Supreme Court in *KSR International Co.* v. *Teleflex Inc.* (KSR),[13] the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham* v. *John Deere Co.*[14] Obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the Court are as follows:

(1) Determining the scope and content of the prior art;

(2) Ascertaining the differences between the claimed invention and the prior art; and

(3) Resolving the level of ordinary skill in the pertinent art.

In *KSR*, the Supreme Court explained that the Examiner must identify a logical reason why a person of ordinary skill in the art would have been led to make a modification or combination to arrive at the claimed invention. An invention composed of several elements is not proved obvious merely by demonstrating that each of the elements was independently known.[15]

Consistent with *KSR*, the Federal Circuit has stated that there must be "some rationale, articulation, or reasoned basis" to support the legal conclusion of obviousness."[16] The reason for modification need not conform to the particular motivation or objective of the patent applicant.[17] However, there still must be some need or problem known in the art that would have provided a reason for combining elements in the manner claimed.[18]

Furthermore, a basic premise of the obviousness analysis set forth in *KSR* is that the combination of prior art references must actually disclose the elements recited in the claims. Consistent with this premise, the Manual for Patenting Examining Procedure (MPEP) sets forth three basic requirements to an obviousness analysis as follows.[19] First, there must be some

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[12] *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. ____ (case 04-1350) (April 30, 2007).
[13] 550 U.S. _, 82 USPQ2d 1385 (2007).
[14] 383 U.S. 1, 148 USPQ 459 (1966).
[15] *KSR*, Slip op. at 14.
[16] *Alza Corp. v. Mylan Laboratories*, 80 USPQ2d 1001, 1005 (Fed. Cir. 2006) (citing *In re Kahn*, 78 USPQ2d 1329 (Fed. Cir. 2006)).
[17] *KSR*, Slip op. at 16.
[18] *Id.*
[19] See MPEP 2143.

suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.[20]

The *KSR* case clarified that the "suggestion or motivation" requirement is more broadly a requirement that the Examiner articulate a "rational reason" for the modification. However, the *KSR* case did not modify the basic requirement of the obviousness analysis that requires the Examiner to show that the prior art collectively teaches the elements of Appellant's claims. Accordingly, if Appellant can show that the prior art lacks a teaching of one or more elements of the pending claims, the obviousness rejections must be reversed. In addition, if there is no *rational* reason a person of ordinary skill in the art would have arrived at the claimed invention in view of the prior art, the obviousness rejections must be reversed.

FIRST GROUND OF REJECTION UNDER APPEAL

GROUP 1 - (Claims 18-28)

Independent claim 18 recites a method for cultivating eukaryotic microorganisms or blue algae. The method comprises applying the eukaryotic microorganisms or blue algae to a first major surface of a sheet-shaped perforated support, wherein the sheet-shaped perforated support is essentially impermeable to the eukaryotic microorganisms or blue algae and wherein the eukaryotic microorganisms or blue algae remain immobilized on the first major surface and are adapted to be removed, supplying an aqueous solution to a second major surface of the sheet-shaped perforated support, wherein the aqueous solution flows along the second major surface of the sheet-shaped perforated support and wherein a portion of the aqueous solution flowing along the second major surface of the sheet-shaped perforated substrate is essentially transported by capillary forces from the second major surface to the first major surface through the sheet-shaped perforated support, and growing the eukaryotic microorganisms or blue algae on the first major surface of the sheet-shaped perforated support.

[20] See MPEP 2143.

In the final Office Action, the Examiner indicated that Davies anticipates claim 18.[21] However, the techniques of Davies are nothing similar to the features recited in claim 18. Indeed, Davies lacks not one, but several features recited in claim 18. For this reason, the anticipation rejections based on Davies must be reversed.

FIGS. 1 and 2 of the present application are reproduced below to help illustrate the features recited in independent claim 18.

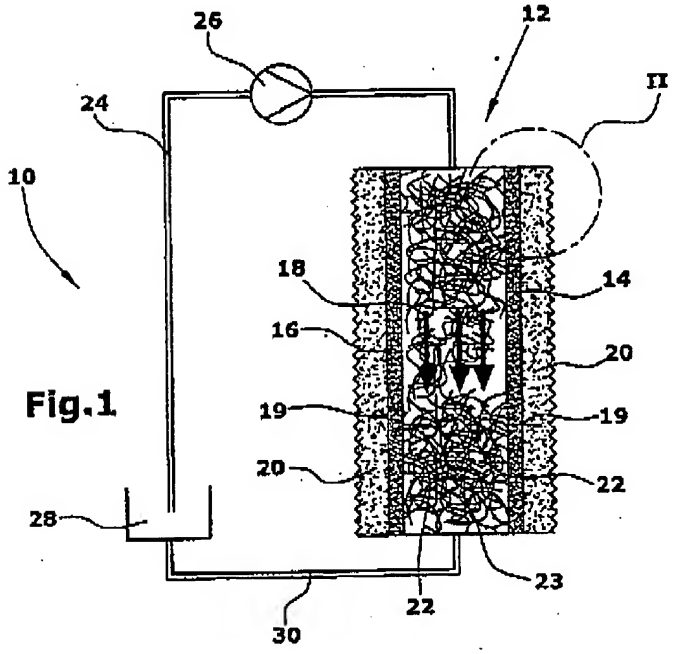


Fig.1

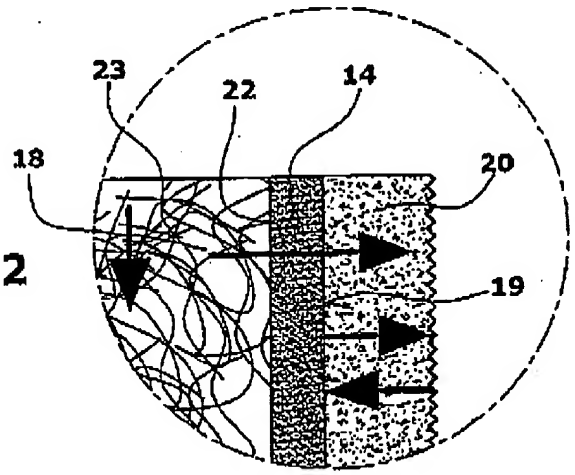


Fig.2

As shown in FIGS. 1 and 2, the claimed invention requires the use of a sheet-shaped perforated support 14. An aqueous solution 18 is supplied along a second major surface 22 of sheet-shaped perforated support 14 and eukaryotic microorganisms or blue algae 20 grow on a first major surface 19 of the sheet-shaped perforated support 14. Capillary forces transport the aqueous solution 18 through sheet-shaped perforated support 14.

None of theses features is disclosed or suggested by Davies. In particular, Davies fails to disclose or suggest the use of anything that could be reasonably considered to be a sheet-shaped

[21] The Anticipation rejection also relied on Chaverot to support the assertion that Davies inherently suggests a geotextile, as recited in claim 21. Claim 21 is addressed in greater detail below.

perforated support. Moreover, even if the structure described by Davies could be construed to define a sheet-shaped perforated support, the support of Davies does not have eukaryotic microorganisms grown on a first major surface of the support and an aqueous solution supplied along a second major surface of the support. For at least these reasons, the anticipation rejections based on Davies should be withdrawn.

Davies cultivates biological material within channels of a support matrix, e.g., as shown in FIG. 1, reproduced below.

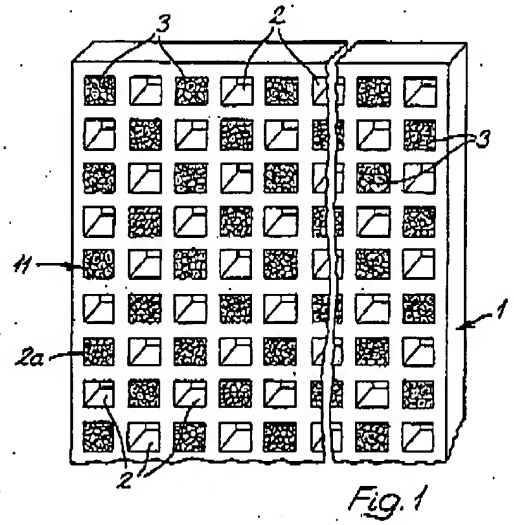


Fig. 1

Nothing in Davies suggests the use of a sheet-shaped perforated support essentially impermeable to the eukaryotic microorganisms or blue algae. Furthermore, nothing in Davies suggests applying the eukaryotic microorganisms or blue algae to a first major surface of a sheet-shaped perforated support. In addition, nothing in Davies suggests supplying an aqueous solution to a second major surface of the sheet-shaped perforated support, wherein the aqueous solution flows along the second major surface of the sheet-shaped perforated support and wherein a portion of the aqueous solution flowing along the second major surface of the sheet-shaped perforated substrate is essentially transported by capillary forces from the second major surface to the first major surface through the sheet-shaped perforated support.

For example, even if the support matrix 1 of Davies could be construed as a sheet-shaped perforated support, eukaryotic microorganisms or blue algae are not applied or grown on any major surface of the support matrix 1. Instead, Davies teaches plant cells 3 being contained

within channels 2a of support matrix 1. This is not suggestive of the features recited in claim 18. Accordingly, the rejections must be reversed.

Indeed, the cited passages of Davies teach liquid or gas being transferred between channels 2a. In Davies, aqueous solution does not flow along any major surface. Moreover, an aqueous solution is never transported by capillary forces from the second major surface to the first major surface through the sheet-shaped perforated support.

In short, Davies fails to teach the use of any sheet-shaped perforated support, but uses a support matrix 1 in which plant cells 3 are contained within channels 2a of support matrix 1. Moreover, even if support matrix 1 were construed as being some type of sheet-shaped perforated support, plant cells 3 are not disposed on any major surface of support matrix 1, but are instead contained within channels 2a. In addition, in Davies, an aqueous solution does not flow along any major surface of support matrix 1, much less flow along a second major surface to be transported by capillary forces from the second major surface to the first major surface. Indeed, it is difficult to fathom how or why an aqueous solution would be distributed across any major surface of the support matrix 1 of Davies insofar as plant cells 3 are not disposed on any major surface of support matrix 1, but are instead contained within channels 2a.

In the final Office Action, the Examiner advanced several contrived interpretations of Davies. First, the Examiner indicated that support matrix 1 of Davies is considered to be sheet-shaped. Based on the discussion above, however, Appellant submits that this interpretation is clearly erroneous. Support matrix 1 is just that, a "matrix" that defines "channels" for plant growth, and is not anything that could be reasonably construed as being sheet-shaped perforated support.

The Examiner also stated that the channels 2a of the support matrix 1 of Davies may be considered as defining major surfaces. The Examiner stated that cells are grown in a first channel and liquid and/or gas nutrients are transferred between first and second channels across porous walls via capillary forces. Appellant submits that these contrived interpretations of Davies are improper, and still fail to meet the limitations of claim 18.

For example, claim 18 specifically requires an aqueous solution to be supplied along a second major surface of sheet-shaped perforated support, and eukaryotic microorganisms or blue algae to be grown on a first major surface of the sheet-shaped perforated support, wherein

capillary forces transport the aqueous solution through sheet-shaped perforated support. None of these features are suggested by Davies.

To the extent that support matrix 1 could be construed as defining any sheet-shaped form, the inner walls of channels 2a cannot be reasonably construed as being major surfaces of support matrix 1. Such an interpretation is nonsensical. For example, even if matrix 1 is considered to be a sheet-shaped perforated support, the inner walls of channels 2a cannot be considered major surfaces of support matrix 1.

Furthermore, even if Davies suggests liquid and/or gas nutrients being transferred between first and second channels across porous walls via capillary forces, these features are nothing akin to those recited in claim 18. Again, claim 18 requires an aqueous solution to be supplied along a second major surface of sheet-shaped perforated support, and eukaryotic microorganisms or blue algae to be grown on a first major surface of the sheet-shaped perforated support, wherein capillary forces transport the aqueous solution through sheet-shaped perforated support. In Davies, plant cells 3 are contained within channels 2a of support matrix 1 and an aqueous solution is not transferred from one major surface of support matrix 1 associated with the supply of aqueous solution to another major surface of support matrix 1 associated with eukaryotic microorganisms or blue algae.

Basically, Davies fails to disclose or suggest every aspect of claim 18, and describes a totally different structure and technique for cultivating biological material. Accordingly, the anticipation rejections based on Davies should be withdrawn.

GROUP 2 - (Claim 28)

The rejection of dependent claim 28 as being anticipated by Davies should be reversed for the at least the reasons advanced above with respect to independent claim 18, insofar as claim 28 inherits the limitations of independent claim 18. In addition, rejection of dependent claim 28 should be reversed for additional reasons, and claim 28 is being presented under a separate heading to illustrate such additional reasons.

Moreover, Appellant also submits that the interpretations of Davies advanced in the rejection of claim 28 further demonstrate inconsistencies in the Examiner's position.

Claim 28 is dependent upon claim 18 and requires the sheet-shaped perforated support to comprise a first sheet-shaped perforated support. Claim 28 further requires supplying the aqueous solution between the second major surface of the first sheet-shaped perforated support and a second major surface of a second sheet-shaped perforated support, wherein the first and second sheet-shaped perforated supports have their second major surfaces facing each other and arranged essentially in parallel to each other.

The arrangement set forth in dependent claim 28 can also be seen from FIG. 1 of the present application, reproduced above. In this case, an aqueous solution 18 flows between two different sheet-shaped perforated supports 14, 16, and eukaryotic microorganisms or blue algae 20 grow on the outer major surfaces 19 of the sheet-shaped perforated supports 14, 16.

Nothing in Davies even suggests the use of one sheet-shaped perforated support, much less two different sheet-shaped perforated supports that have their second major surfaces facing each other and arranged essentially in parallel to each other. Even if the channels 2a of Davies define inner walls that are parallel to other inner walls of other channels 2a, the inner walls of channels 2a are not major surfaces of support matrix 1.

Moreover, the Examiner cannot construe support matrix 1 as being a sheet-shaped support, and then construe the different channels of matrix 1 as defining different sheet-shaped supports. Such a construction is entirely inconsistent.

Davies discloses a signal support matrix 1, which the Examiner construed as being a sheet-shaped perforated support. Davies never contemplates two different support matrices being arranged in parallel, and any construction of the walls channels 2a being different support matrices, is inconsistent with the Examiner's own interpretations of Davies.

For these additional reasons, the rejection of claim 28 must be withdrawn.

SECOND GROUND OF REJECTION UNDER APPEAL

GROUP 3 - (Claims 18-30)

In the final Office Action, the Examiner rejected claims 18-30 as being obvious in view of Davies. For claims 18-28, however, the Examiner provided the same rational discussed above in the First Ground of Rejection Under Appeal. In particular, in the obviousness rejections, the

Examiner simply stated that Davies anticipates the subject matter of claims 18-28, and thus renders them obvious.

As demonstrated above, however, Davies neither discloses nor suggests many features of claim 18. In addition, as demonstrated above, Davies neither discloses nor suggests the features of dependent claim 28.

Appellant respectfully submits that the rejections of claim 18-28 as being obvious in view of Davies are improper for all the same reasons addressed above in the First Ground of Rejection Under Appeal. Appellant incorporates herein all the arguments above in the First Ground of Rejection Under Appeal, which demonstrate that Davies fails to disclose or suggest the subject matter of claims 18-28.

GROUP 4 - (Claim 30)

Dependent claim 30 further recites removing the eukaryotic microorganisms or the blue algae from the sheet-shaped perforated support by application of chemical treatment. In rejecting this claim, the Examiner did not cite any evidentiary support from the prior art, but simply stated that the "step of harvesting cells is a results effective variable." The Examiner concluded that claim 30 was obvious insofar as Applicant did not provide any evidence of criticality of a claimed range.

Appellant traverses the Examiner's analysis of claim 30, and respectfully submits that the Examiner's entire discussion of criticality and "result-effective variables" is misplaced.. Claim 30 does not recite any variable, much less a variable that is recognized by the prior art as affecting a particular result. Moreover, claim 30 does not recite any ranges that could be argued as being critical.

Instead, claim 30 recites features that are not disclosed or suggested by Davies. In particular, claim 30 recites a step of removing the eukaryotic microorganisms or the blue algae from the sheet-shaped perforated support by application of chemical treatment. The Examiner has failed to provide any evidence that applying chemical treatment for removal of eukaryotic microorganisms or the blue algae from the sheet-shaped perforated support was known at the time of Applicant's invention. Furthermore, the Examiner has provided no evidence that

removal of eukaryotic microorganisms or the blue algae is recognized as some type of variable that can affect results.

The rejection of claim 30 is nonsensical, and must be reversed. The case law cited by the Examiner concerns claim features in the form of quantified numerical ranges. Such case law is totally irrelevant to the features of claim 30, which recite a method step that is not disclosed or suggested by Davies. Claim 30 does not recite any numerical ranges or any feature that could be considered to be a results effective variable, i.e., a variable that the prior art recognizes as having an effect on a known result.

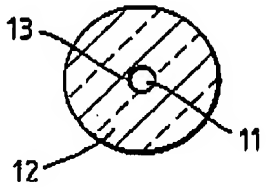
THIRD GROUND OF REJECTION UNDER APPEAL

GROUP 5 - (Claims 18, 19 and 22-24)

In the final Office Action, the Examiner rejected claims 18, 19 and 22-24 as being obvious in view of Halling.

However, like Davies, Halling fails to disclose or suggest a method for eukaryotic microorganisms or blue algae that uses a sheet-shaped perforated support. Instead, Halling discloses a bioreactor that has an inner flow channel surrounded by a support matrix. FIG. 2 of Halling is reproduced below, and clearly illustrates the tubular nature of the Halling device. As can be seen from FIG. 2, the tubular device of Halling is not anything like a sheet-shaped perforated support, as required by Appellant's claims.

Fig. 2.



The device of Halling shows a support matrix 12 with an inner flow channel 11. In the device of Halling, a microporous membrane 13 surrounds the inner surface of flow channel 11 (the tube

side). Aerobic microbial cells are immobilized between the pores of membrane 13 on the outside of membrane 13 (the "shell side"), i.e., the outer surface of support matrix 12.

Accordingly, Halling does not use a sheet-shaped perforated support essentially impermeable to eukaryotic microorganisms or blue algae. Moreover, nothing in Halling suggests applying eukaryotic microorganisms or blue algae to a first major surface of a sheet-shaped perforated support, or supplying an aqueous solution to a second major surface of the sheet-shaped perforated support, as required by Appellant's independent claim 18.

In the final Office Action, the Examiner stated that:

> Although Halling et al. do not teach the support being sheet-shaped, it would have been obvious to a person of ordinary skill in the art because there is legal precedent that the change of shape in a material used in the invention would be obvious to a person of ordinary skill in the art in the absence of persuasive evidence to prove the significance of such shape in the invention.

Appellant is confused by the Examiner's assertions, and respectfully submits that the Examiner is not applying the correct standard in an obviousness analysis. The question of obviousness is whether the teaching of Halling suggests the features of claim 18. Halling clearly fails to suggest any sheet-shaped perforated support.

To the extent that claim 18 differs from the teaching of Halling, the question of obviousness is whether a person of ordinary skill in the art would have had any rational reason to modify the structure of Halling in a manner that arrives at the features of claim 18. In this case, the Examiner recognized that Halling does not use any sheet-shaped perforated support, but failed to articulate any rational reason why a person of ordinary skill in the art would have modified the tubular structure of Halling to arrive at a sheet-shaped perforated support. For this reason, the Examiner has clearly failed to demonstrate a prima facie case of obviousness of claim 18.

Again, in the device of Halling, a microporous membrane surrounds the inner surface of flow channel 11 (the tube side). Aerobic microbial cells are immobilized between the pores of membrane 13 on the outside of membrane 13 (the "shell side"). This is not even remotely similar to the structure required by claim 18, which is planar in nature, e.g., specifically requiring a sheet-shaped perforated support with an aqueous flow on one major surface and eukaryotic microorganisms or blue algae growth on the other major surface.

Furthermore, the Examiner's recognition that Halling does not teach a sheet-shaped support actually demonstrates the non-obvious nature of this feature. In particular, Applicant's claimed invention uses a sheet-shaped perforated support in order to promote the growth of eukaryotic microorganisms or blue algae, and facilitate much easier removal of such organisms than can be achieved using a tubular structure to grow organisms. Thus, the sheet-shaped and perforated nature of the support, as recited in Applicant's claims, is a significant and non-obvious feature that may improve the function of eukaryotic microorganism and/or blue algae growth relative to the structure of Halling. Given that the Examiner appears to recognize these important differences, it is unclear why the Examiner has advanced obviousness rejections.

For at least these reasons, the rejections of claims 18, 19 and 22-24 under 35 U.S.C. 103(a) as being obvious over Halling must be reversed.

FOURTH GROUND OF REJECTION UNDER APPEAL

GROUP 6 - (Claims 20 and 21)

In the final Office Action, the Examiner rejected claims 20 and 21 under 35 U.S.C. 112, first paragraph as lacking support in the Written Description. Claim 20 recites that the distributing layer comprises a non-woven material comprising glass or plastic fibers. Claim 21 recites that the distributing layer comprises a geotextile.

Claim 20 finds support in Appellant's original disclosure on page 7, lines 1-10 and page 9, lines 1-5. Claim 20 also finds support from original claim 3, which forms part of Appellant's original disclosure.

Claim 21 finds support in Appellant's original disclosure on page 9, lines 1-5. Claim 21 also finds support from original claim 3, which forms part of Appellant's original disclosure.

Accordingly, the rejections of claims 20 and 21 under 35 U.S.C. 112, first paragraph, are improper and must be reversed.

CONCLUSION OF ARGUMENT

In view of Appellant's arguments, the final rejections of Appellant's claims are improper and should be reversed. Reversal of all pending rejections and allowance of all pending claims is

respectfully requested. Appellant respectfully requests separate review by the Board for each of Groups 1-6 addressed below under separate headings.

Date: June 24, 2008

By: _____

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APPENDIX: CLAIMS ON APPEAL

Claims 1 – 17 (Cancelled).

Claim 18 (Previously presented) A method for cultivating eukaryotic microorganisms or blue algae, the method comprising:

applying the eukaryotic microorganisms or blue algae to a first major surface of a sheet-shaped perforated support, wherein the sheet-shaped perforated support is essentially impermeable to the eukaryotic microorganisms or blue algae and wherein the eukaryotic microorganisms or blue algae remain immobilized on the first major surface and are adapted to be removed;

supplying an aqueous solution to a second major surface of the sheet-shaped perforated support, wherein the aqueous solution flows along the second major surface of the sheet-shaped perforated support and wherein a portion of the aqueous solution flowing along the second major surface of the sheet-shaped perforated substrate is essentially transported by capillary forces from the second major surface to the first major surface through the sheet-shaped perforated support; and

growing the eukaryotic microorganisms or blue algae on the first major surface of the sheet-shaped perforated support.

Claim 19 (Previously presented) The method of claim 18, wherein a layer produced by the aqueous solution contains a distributing layer that distributes the aqueous solution across the second major surface.

Claim 20 (Previously presented) The method of claim 19, wherein the distributing layer comprises a non-woven material comprising glass or plastic fibers.

Claim 21 (Previously presented) The method of claim 20, wherein the distributing layer comprises a geotextile.

Claim 22 (Previously presented) The method of claim 19, wherein the distributing layer is hydrophilic.

Claim 23 (Previously presented) The method of claim 19, wherein the sheet-shaped perforated support and the distributing layer are hydrophilic.

Claim 24 (Previously presented) The method of claim 18, wherein the sheet-shaped perforated support is hydrophilic.

Claim 25 (Previously presented) The method of claim 19, wherein the distributing layer comprises one or more of the following: mineral fibers and hydrophilic organic fibers.

Claim 26 (Previously presented) The method of claim 19, wherein the distributing layer and the sheet-shaped perforated support comprise one or more of the following: mineral fibers and hydrophilic organic fibers.

Claim 27 (Previously presented) The method of claim 18, wherein the sheet-shaped perforated support comprises one or more of the following: mineral fibers and hydrophilic organic fibers.

Claim 28 (Previously presented) The method of claim 18, wherein the sheet-shaped perforated support comprises a first sheet-shaped perforated support, the method further comprising:

supplying the aqueous solution between the second major surface of the first sheet-shaped perforated support and a second major surface of a second sheet-shaped perforated support, wherein the first and second sheet-shaped perforated supports have their second major surfaces facing each other and arranged essentially in parallel to each other.

Claim 29 (Previously presented) The method of claim 18, further comprising:

removing the eukaryotic microorganisms or the blue algae from the sheet-shaped perforated support by application of mechanical forces.

Claim 30 (Previously presented) The method of claim 18, further comprising:

removing the eukaryotic microorganisms or the blue algae from the sheet-shaped perforated support by application of chemical treatment.

APPENDIX: EVIDENCE

None

APPENDIX: RELATED PROCEEDINGS

None